

Application No.: 10/681,471

Docket No.: JCLA11529

REMARKSPresent Status of the Application

The Office Action rejected all presently-pending claims 1-22. Specifically, the Office Action rejected claims 1-3, 5, 7, 8, 10, 12-16, 18 and 20-22 under 35 U.S.C. 102(e), as being anticipated by Sievenpiper et al. (U.S. 2003/0010529; hereafter Sievenpiper). The Office Action also rejected claims 4, 6, 9, 11, 17 and 19 under 35 U.S.C. 103(a) as being unpatentable over Sievenpiper. Applicants have amended claims 1 and 12 and canceled claim 14 to improve clarity. Also, the applicants have added claims 23-28 to further define the present invention. No new matter is added by the amendment made herein. After entry of the foregoing amendments, claims 1-13 and 15-28 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Summary of Applicants' Invention

The Applicant's invention is directed to a ground shield structure have a plurality of ground cells and interconnection members, wherein the ground cells are arranged to be separated from each other with a narrow slot on the same plane and the interconnection members are used to electrically connect the ground cells to each other (page 5, paragraph[0017] through [0018]). Therefore, **the ground shield structure can cut off the eddy current caused by the inducted current on the ground shield structure**. Further, the ground shield structure possesses the feature of increasing the slow-wave factor so that the wave can slowly propagate and the needed

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area for the circuit layout is effectively reduced. In addition, the inductance quantity and capacitance quantity of the ground shield in a unit area are increased.

Discussion of Office Action Rejections

The Office Action rejected claims 1-3, 5, 7, 8, 10, 12-16, 18 and 20-22 under 35 U.S.C. 102(e), as being anticipated by Sievenpiper et al. (U.S. 2003/0010529; hereafter Sievenpiper) and asserted that Sievenpiper discloses all claimed features of the present invention.

Applicants respectfully traverse the rejections for at least the reasons set forth below.

It is well established that anticipation under 35. U.S.C. 102 requires each and every elements of the rejected claims must be disclosed exactly by a single prior art reference.

The independent claims 1, 7 and 12 are allowable for at least the reason that Sievenpiper fails to teach or disclose each and every features of the proposed independent claims 1, 7 and 12.

AS stated above, claims 1, 7 and 12 recite respectively:

Claim 1. A ground shield structure, suitable for use in an electronic circuit structure, the ground shield structure at least comprising:

a plurality of multi-edge ground cells, periodically, compactly, and complementarily distributed on a ground surface, wherein a slot exists between the two adjacent ground cells to reduce an eddy current induced from the electronic circuit structure.

Claim 7. A ground shield structure, suitable for use in an electronic circuit structure, the ground shield structure at least comprising:

a ground surface, comprising a plurality of slots in a multi-edge shape, the slots are distributed in the ground surface by a periodic, compact and complementary arrangement.

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Claim 12. A ground shield structure, suitable for use in an electronic circuit structure, the ground shield structure at least comprising:

a ground surface, comprising a plurality of multi-edge ground cells and at least an interconnection member connecting two of the multi-edge ground cells, wherein the multi-edge ground cells are distributed on the ground surface by a periodic, compact and complementary arrangement, such that the ground shield structure reduces an eddy current induced by the electronic circuit structure.

(*Emphasis added*). Applicants assert that claims 1, 7 and 12 patently define over the cited art for at least the reason that the cited art fails to disclose at least the features emphasized above.

In the present invention, a plurality of multi-edge ground cells are periodically, compactly and complementarily distributed on a ground surface of the ground shield structure. When an inductance coil over the ground shield structure is applied with a current, the induced eddy current is formed on the ground shield structure. Because of the slots separating the ground cells from each other, the eddy current can be cut off. Further, since the slots according to the present invention are relatively narrow, the electric field on the ground shield structure does not leak to the bottom region of the ground shield structure through the slots so that the ground cells are used as the termination of the electric field (page 6, paragraph[0019]).

The Office Action asserted that the top metal plates 10 and the plated metal vias 13 are physically and functionally equal to the ground cells 210 and interconnections 212 of the present invention. Applicants respectfully disagree with this assertion and would like to attract Examiner's attention to Figs 1 and 2(f) of the cited art. Sievenpiper clearly recites that the Hi-Z

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surface is constructed as a lattice of overlapping "thumb-tack"-like protrusions on a flat metal ground plane 22 and the protrusion consist of flat metal plates 10 connected to the ground plane by metal plated vias 13 (paragraph [0003]). Sievenpiper further emphasizes that the Hi-Z structure is built using printed circuit board techniques and the printed circuit board is not shown in Fig. 1 for ease of illustration (paragraph [0003]). Therefore, as shown in Fig. 2(f), it is obvious that the top metal plates are overlapping with each other and are formed within the circuit board. Hence, the metal plates are not distributed on the same ground surface.

Furthermore, in paragraph [0003] lines 12-16 of cited art, Sievenpiper discloses that the Hi-Z surface comprises a plurality of elements and each elements is an LC circuit with capacitance determined by the proximity and overlap area of the metal plates 10. That is, the metal plates 10 are overlapping with each other in order to provide the capacitance therebetween. However, Sievenpiper silence about the eddy current induced by the conductance coil over the electromagnetic ground plane provided by them and further fails to mention the use of the Hi-Z surface for reducing the induced eddy current.

Moreover, in paragraph [0003] lines 5-12 of cited art, Sievenpiper mentions that "the flat metal plates 10 would appear on the printed circuit board's top surface while the ground plan 22 is disposed on its bottom surface. Apparently, the Hi-Z surface is not functionally and physically equal to the ground cells as those disclosed by the present invention.

Further, it is obvious that Sievenpiper raises the issue about supporting a finite tangential electric field by using an electromagnetic ground plane with the Hi-Z surface and provides a way

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to manufacture this kind of electromagnetic ground plane (paragraph [0002]). Hence, Applicant respectfully emphasizes that people skill in the art would not modify the cited art provided by Sievenpiper with forming slots between the metal plates to obtain the features of the present invention because the motivation and the goal of the cited art are totally different from those mentioned in the present invention.

Therefore, Sievenpiper substantially fails to teach each and every feature of claims 1, 7 and 12, and therefore, Sievenpiper cannot possibly anticipate the claimed invention as claimed in the proposed independent claims 1, 7 and 12 in this regard.

Claims 2-3, 5, 8, 10, 13, 15-16, 18 and 20-22, which depend from claims 1, 7 and 12 respectively, are also patentable over Sievenpiper, at least because of their dependency from an allowable base claim.

For at least the foregoing reasons, Applicants respectfully submit that claims 1-3, 5, 7, 8, 10, 12-13, 15-16, 18 and 20-22 patently define over Sievenpiper, and therefore should be allowed. Reconsideration and withdrawal of the above rejections is respectfully requested.

The Office Action also rejected claims 4, 6, 9, 11, 17 and 19 under 35 U.S.C. 103(a) as being unpatentable over Sievenpiper.

Since claims 4, 6, 9, 11, 17 and 19 is dependent claim which further define the invention recited in claims 1, 7 and 12, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejection 102. That is, the motivation and the goal of the cited art are totally different from those mentioned in the

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present invention. Thus, reconsideration and withdrawal of this rejection are respectively requested.

Newly Added Claims

Applicants have further added claims 23-28 to further define the ground shield structure of the present invention. All the claimed features in claims 23-28 are supported in paragraphs [0026] and [0027] of the specification of the present invention. The claims are believed allowable and such allowance is respectfully requested.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-13 and 15-28 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,
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